

ABSTRACT OF THE DISCLOSURE

An aggregation of crystals extending long in the scanning direction (a long crystal grain region) is formed when a continuous wave laser oscillator (a CW laser oscillator) is employed for annealing the semiconductor film in the manufacturing process of a semiconductor device. The long crystal grain region has a characteristic similar to that of single crystal in the scanning direction, but there is restriction for high integration because of the small output of the CW laser oscillator.

In order to solve the problem, a pulsed laser beam 1 having a wavelength absorbed sufficiently in the semiconductor film is used in combination with a laser beam 2 having a high output and having a wavelength absorbed sufficiently in the melted semiconductor film. After irradiating the laser beam 1 to melt the semiconductor widely, the laser beam 2 is irradiated to the melted region. And then the laser beam 2 and the semiconductor film are moved relatively while keeping the melting state so as to form the long crystal grain region. The laser beam 2 keeps to be irradiated to the semiconductor film until the laser beam 1 is irradiated, and the output of the laser beam 2 is attenuated when the laser beam 1 is irradiated so as not to give the energy more than is needed so that the very uniform laser annealing becomes possible. Thus the long crystal grain region having a width 10 times as broad as the conventional one can be formed.